
Chapter 8 — ISL Maintenance

Maintenance overview

From a maintenance perspective, Option 11 ISL operation consists of these major aspects:

- hardware and software states
- near-end and far-end status
- link and/or span integrity

Option 11 ISL operation is monitored and reported on through service messages.

Option 11 maintenance provides several tools, either manual or automatic, for maintaining effective ISL operation. These tools are service commands (accessible through the software overlays), and diagnostic routines.

Maintenance messages

The following sections describe service messages that may appear on the Option 11 maintenance TTY as a result of ISL operation.

D-Channel status and error conditions are reported as DCH messages. PRI status and error conditions are reported in the messages found in Table 43. (Additional information on DCH and PRI messages can be found in the Option 11 Software Guide.)

Table 43
Status messages

Message	Meaning
DTA	Digital Trunks
DTI	Digital Trunk Interface
PRI	Primary Rate Interface

Message descriptions

Service messages provide near and far end switch status. Both service and service acknowledge messages are supported on PRI B-channels and ISL channels.

Service and service acknowledge messages for B-channels and ISL channels are supported between:

- Meridian 1 to Meridian 1: ISL and PRI
- Meridian 1 to DMS-100: PRI only
- Meridian 1 to DMS-250: PRI only
- Meridian 1 to AT&T ESS4 and ESS5: PRI only.

Service and service acknowledge messages for B-channels and ISL channels report the following statuses:

- in-service
- maintenance
- out-of-service

Near-end and far-end sub-categories are defined for each maintenance status. See the table below for possible combinations of near-end and far-end statuses and the channel capability for each status. When the near-end and far-end statuses do not match, the more severe maintenance status takes effect over the less severe maintenance status.

Table 44
Maintenance message and status combinations

Near End Status	Far End Status	B or ISL Channel capability
In-service	In-service	Incoming and outgoing call allowed
In-service	Maintenance	Incoming calls allowed only
In-service	Out-of-service	Not allowed to use
Maintenance	N/A	Not allowed to use
Out-of-service	N/A	Not allowed to use

Message functions

Service messages are used to monitor the following:

- D-Channel establishment
- D-Channel sanity polling
- B-channel or ISL channel status change
- Channel status audit.

D-Channel establishment

When the D-Channel establishes, the B-channel status is supported by sending service messages for each B-channel controlled by a D-Channel. This allows the far end to synchronize its channel states. These services messages are sent when the D-Channel is brought up automatically by the system or manually by using LD 96.

D-Channel sanity polling

If a D-Channel has been idle for 30 seconds, a service message is sent to poll the sanity of the link. The service message is sent regardless of whether the near end is configured as master or slave.

B-channel or ISL channel status change

Whenever there is a status change for a B-channel or an ISL channel, the new status is reported to the far end via a service message. Status change can occur through service change or maintenance operations, such as the addition or deletion of a channel in LD 14, or disabling of the associated loop, shelf, card or unit in LD 30, LD 32, LD 36, LD 41 or LD 60.

Channel status audit

LD 30 is enhanced to allow channel status audit to be initiated. The channels associated with each D-Channel are examined and their status is reported to the far end via service messages.

Activating service messages

You activate the service messages in LD 96 on a per D-Channel basis. The commands are:

Table 45
D-Channel messages

Command	Description
ENL SERV N	turns on the support of service and service acknowledge messages for DCH link N.
DIS SERV N	turns off the support of service and service acknowledge messages for DCH link N.
STAT SERV (N)	displays the current service and service acknowledge message SERV setting for individual DCH N or DCH.

When configuring these messages, the SERV command should only be enabled if both switches are equipped with a minimum of X11 release 15 software.

Using Option 11 ISL maintenance tools

Maintenance commands

Table 46 provides a quick reference lists of important ISL commands.

WARNING

Ensure that other TTYs and/or D-Channels residing on the NTAK02 are disabled.

IMPORTANT

Extreme care must be taken when enabling the D-Channel message monitoring option due to the possible heavy volume of messages during normal traffic. Use this command only during very light or no traffic conditions for trouble-shooting purposes. Remember to disable the monitoring tool when you are finished.

The port (TTY) performing the monitoring **MUST** have MTTC programmed.

Table 46
D-Channel commands (LD 96)D 96)

Command	Action
DIS DCH N	disable DCHI port N
DIS MSGI N	disable incoming D-Channel messages on link N *
DIS MSGO N	disable outgoing D-Channel messages on link N *
DIS AUTO ON	disable the D-Channel
ENL AUTO ON	auto enable the D-Channel after SYSLOAD
ENL DCH N	enable DCHI port N
ENL MSGI N	enable incoming D-Channel messages on link N *
ENL MSGO N	enable outgoing D-Channel messages on link N *
EST DCH N	establish D-Channel N
PLOG DCHI N	print D-Channel statistics log N
RLS DCH N	release D-Channel N
SDCH	release a D-Channel and switch D-Channels
RST DCH N	reset D-Channel N
STAT DCH (N)	print D-Channel status (link status)
STAT MSGI (N)	print incoming message monitor status
STAT MSGO (N)	print outgoing message monitor status
TEST-100/101/200/201	see DCH tests in NTP
Command	Action
STAT SERV	Print the current service and service acknowledge message for DCHI N
ENL SERV N	enable service messages for DCHI N
DIS SERV N	disable service messages for DCHI N

Maintenance messages

D-Channel status and error conditions are reported as DCH messages. These messages can be found in the Option 11 Software Guide - Maintenance Messages.

Maintenance testing

ISL Back to Back (without Modems)

For maintenance reasons or testing purposes it is sometimes necessary to connect ISL back to back (without modems). Use the following diagram to accomplish the connection. This connection is normally done within the same Meridian 1 system in a lab environment.

Figure 79
ISL back-to-back connection

